

followed by lighter shocks during night, and on the 25th, every fifteen minutes; "roads obstructed, and shipping operations paralyzed for three days." On the 5th of the present month, 11:20 a. m., Flushing, N. Y., severe shock, shaking houses and breaking crockery and windows. 26th, 11:56 a. m., San Francisco, California, three vibrations, N. to S., lasting about five seconds.

*Tidal Wave.*—At Callao, Peru, S. A., Jan. 27th, "sea excessively rough all day, the waves washed with violence along the whole sea front of town and for about two miles on either side, causing great destruction of property; flooded whole of English railroad station and streets adjoining; wet dock badly damaged; all forts fronting on sea suffered; the Ayacucho battery nearly washed away."

## SOLAR PHENOMENA.

*Sun spots.*—The following observations, made by Mr. D. P. Todd, have been communicated by Rear Admiral John Rogers, U. S. N., Superintendent of the Naval Observatory.

Feb., 1878.	No. of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		Remarks.
	Groups	Spots.	Groups	Spots.	Groups	Spots.	Groups	Spots.	
3d, 3 p. m...	2	14	0	0	—	—	2	14	Many of the spots very small. Many of the spots very small. Many of the spots very small. Most of the spots small. Spots probably disappeared by solar rotation.
4th, 11 a. m...	0	12	0	0	0	0	2	26	
5th, 10 a. m...	0	4	0	0	0	0	2	30	
6th, 2 p. m...	0	5	0	0	0	0	2	35	
7th, 3 p. m...	0	0	0	10	0	0	2	25	
12th, 1 p. m...	0	0	—	—	0	0	0	0	
16th, 12 m...	0	0	0	0	0	0	0	0	
18th, 1 p. m...	1	0	0	0	0	0	0	0	
19th, 12 m...	0	0	0	0	0	0	0	0	
20th, 12 m...	0	0	0	0	0	0	0	0	
25th, 3 p. m...	0	0	0	0	0	0	0	0	Large group of faculae. Large group of faculae.
26th, 3 p. m...	0	0	0	0	0	0	0	0	
27th, 11 a. m...	0	0	0	0	0	0	0	0	
28th, 11 a. m...	0	0	0	0	0	0	0	0	

Prof. Hinrichs, of Iowa City, reports on the 3rd, 1 group, 7 spots, two very large size; 4th, 2 groups, 12 spots; 5th, 2 groups, 12 spots; 6th, 2 groups, 9 spots; on the other days of observation, viz: the 11th, 12th, 19th, 26th 27th and 28th, no spots were observed.

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